Ling 566
Oct 12, 2023

Semantics

Announcements

- Midterm survey — see Canvas announcement

Overview

- Some notes on the linguist's stance
- Which aspects of semantics we'll tackle
- Our formalization; Semantics Principles
- Building semantics of phrases
- Modification, coordination
- Structural ambiguity
- Reading questions

The Linguist's Stance: Building a precise model

- Some of our statements are statements about how the model works:

  "[*prep*] and [AGR *3sing*] can't be combined because AGR is not a feature of the type *prep*."

- Some of our statements are statements about how (we think) English or language in general works.

  "The determiners *a* and *many* only occur with count nouns, the determiner *much* only occurs with mass nouns, and the determiner *the* occurs with either."

- Some are statements about how we code a particular linguistic fact within the model.

  "All count nouns are [SPR < [COUNT +]>]."

Semantics: Where's the Beef?

So far, our grammar has no semantic representations. We have, however, been relying on semantic intuitions in our argumentation, and discussing semantic contrasts where they line up (or don't) with syntactic ones.

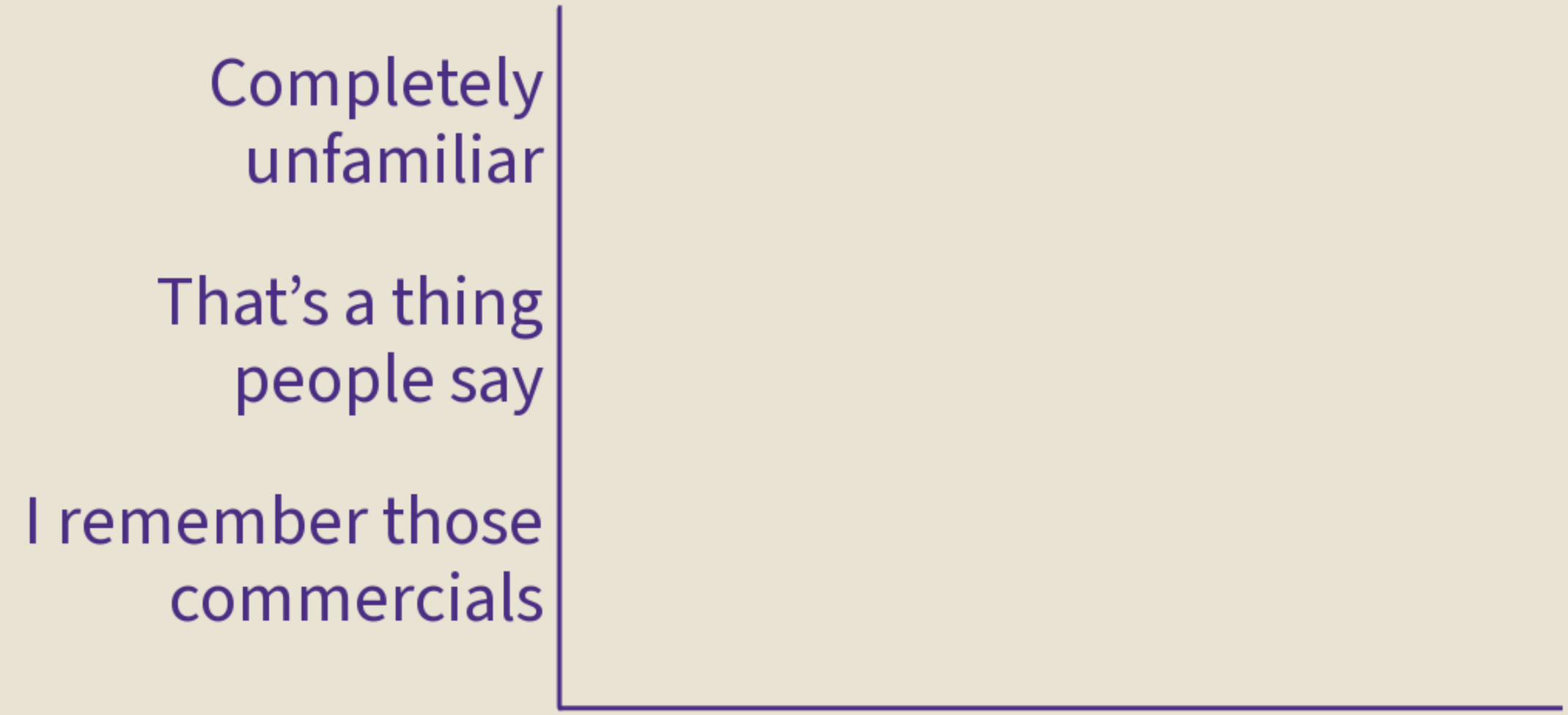
Examples?

- structural ambiguity
- S/NP parallelism
- count/mass distinction
- complements vs. modifiers

When poll is active, respond at **pollev.com/emb**

Text **EMB** to **22333** once to join

"Where's the Beef"?



Total Results: 0

Our Slice of a World of Meanings

Aspects of meaning we won't account for

- Pragmatics
- Fine-grained lexical semantics:

The meaning of *life* is *life'*, or, in our case,

$$\begin{bmatrix} \text{RELN} & \text{life} \\ \text{INST} & i \end{bmatrix}$$

Our Slice of a World of Meanings

$$\begin{bmatrix} \text{MODE} & \text{prop} \\ \text{INDEX} & s \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{save} \\ \text{SIT} & s \\ \text{SAVER} & i \\ \text{SAVED} & j \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Chris} \\ \text{NAMED} & i \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Pat} \\ \text{NAMED} & j \end{bmatrix} \right\rangle \end{bmatrix}$$

"... the linguistic meaning of *Chris saved Pat* is a proposition that will be true just in case there is an actual situation that involves the saving of someone named Pat by someone named Chris." (p. 140)

Our Slice of a World of Meanings

What we are accounting for is the compositionality of sentence meaning.

- How the pieces fit together

  Semantic arguments and indices

- How the meanings of the parts add up to the meaning of the whole.

  Appending RESTR lists up the tree

Semantics in Constraint-Based Grammar

- Constraints as (generalized) truth conditions
  - proposition: what must be the case for a proposition to be true
  - directive: what must happen for a directive to be fulfilled
  - question: the kind of situation the asker is asking about
  - reference: the kind of entity the speaker is referring to

- Syntax/semantics interface: Constraints on how syntactic arguments are related to semantic ones, and on how semantic information is compiled from different parts of the sentence.

Feature Geometry

$$\begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & pos \\ \text{VAL} & \begin{bmatrix} \text{SPR} & list(expression) \\ \text{COMPS} & list(expression) \end{bmatrix} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{MODE} & \{ \text{prop} , \text{ques} , \text{dir} , \text{ref}, \text{none} \} \\ \text{INDEX} & \{ i , j , k , \ldots s_1 , s_2 , \ldots \} \\ \text{RESTR} & list(pred) \end{bmatrix} \end{bmatrix}$$

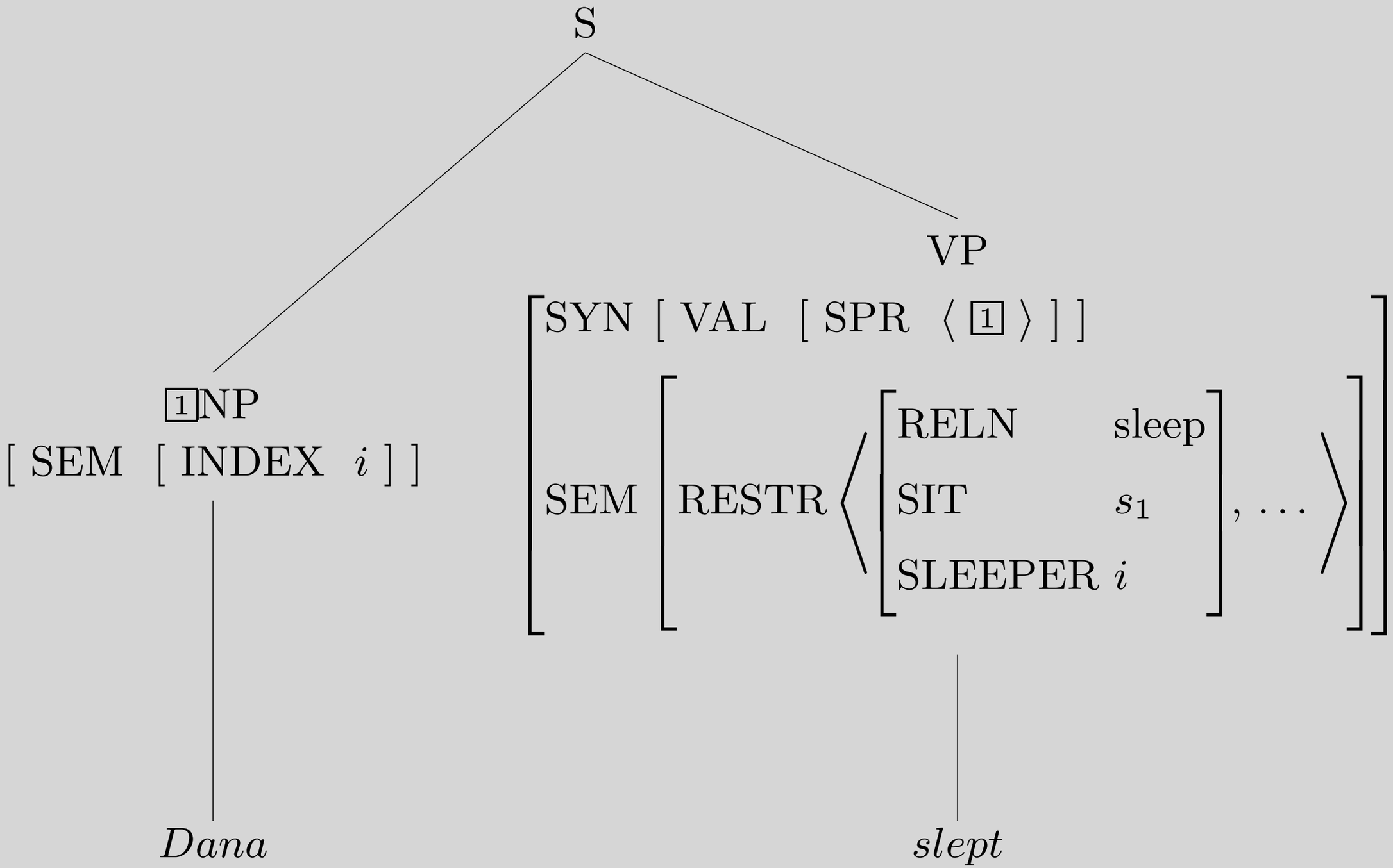
How the Pieces Fit Together

$$\left\langle \text{Dana} , \left[\begin{array}{ll} \textit{word} & \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \left[\begin{array}{ll} \textit{noun} & \\ \text{AGR} & \textit{3sing} \end{array}\right] \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \langle\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{array}\right] \end{array}\right] \\ \text{SEM} & \left[\begin{array}{ll} \text{INDEX} & i \\ \text{MODE} & \text{ref} \\ \text{RESTR} & \left\langle \left[\begin{array}{ll} \text{RELN} & \text{name} \\ \text{NAME} & \text{Dana} \\ \text{NAMED} & i \end{array}\right] \right\rangle \end{array}\right] \end{array}\right] \right\rangle$$

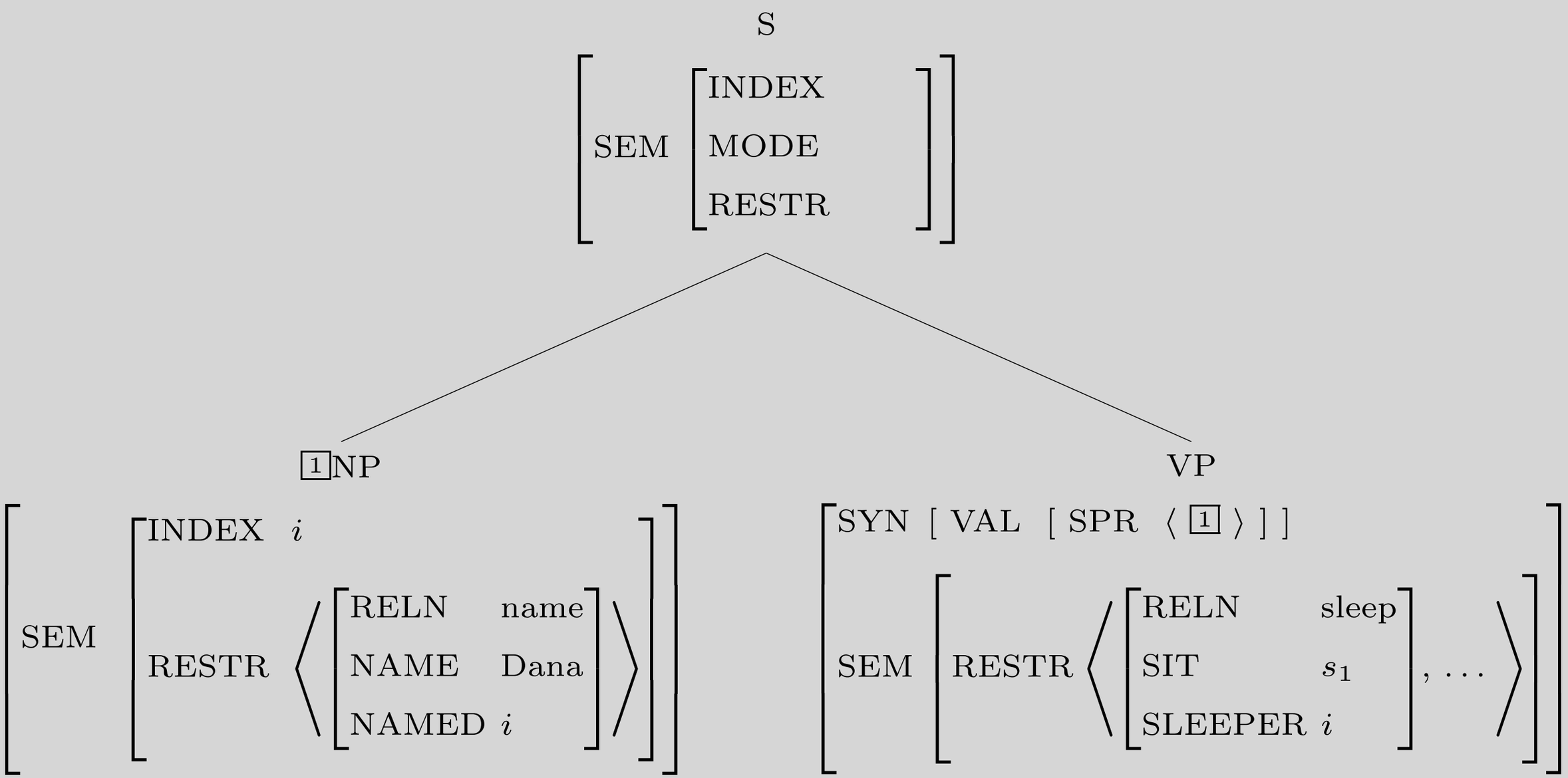
How the Pieces Fit Together

$$\left\langle \text{slept}, \left[\begin{array}{ll} word & \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & verb \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \langle\ \text{NP}\boxed{j}\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{array}\right] \end{array}\right] \\ \text{SEM} & \left[\begin{array}{ll} \text{INDEX} & s_1 \\ \text{MODE} & \text{prop} \\ \text{RESTR} & \left\langle \left[\begin{array}{ll} \text{RELN} & \text{sleep} \\ \text{SIT} & s_1 \\ \text{SLEEPER} & \boxed{j} \end{array}\right], \ldots \right\rangle \end{array}\right] \end{array}\right] \right\rangle$$

The Pieces Together



A More Detailed View of the Same Tree



To Fill in Semantics for the S-node

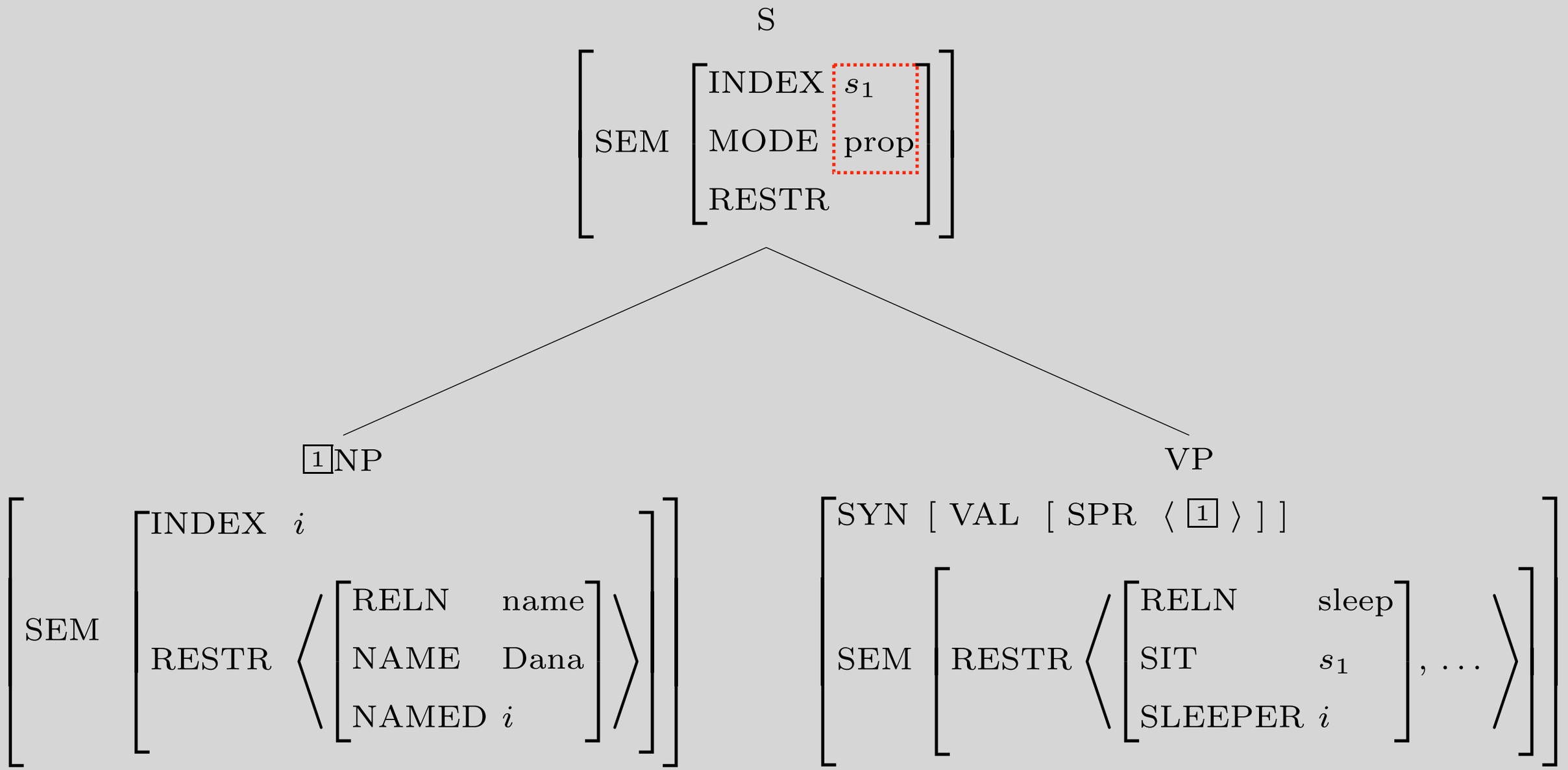
We need the Semantics Principles

- The Semantic Inheritance Principle:

In any headed phrase, the mother's MODE and INDEX are identical to those of the head daughter.

- The Semantic Compositionality Principle:

Semantic Inheritance Illustrated



To Fill in Semantics for the S-node

We need the Semantics Principles

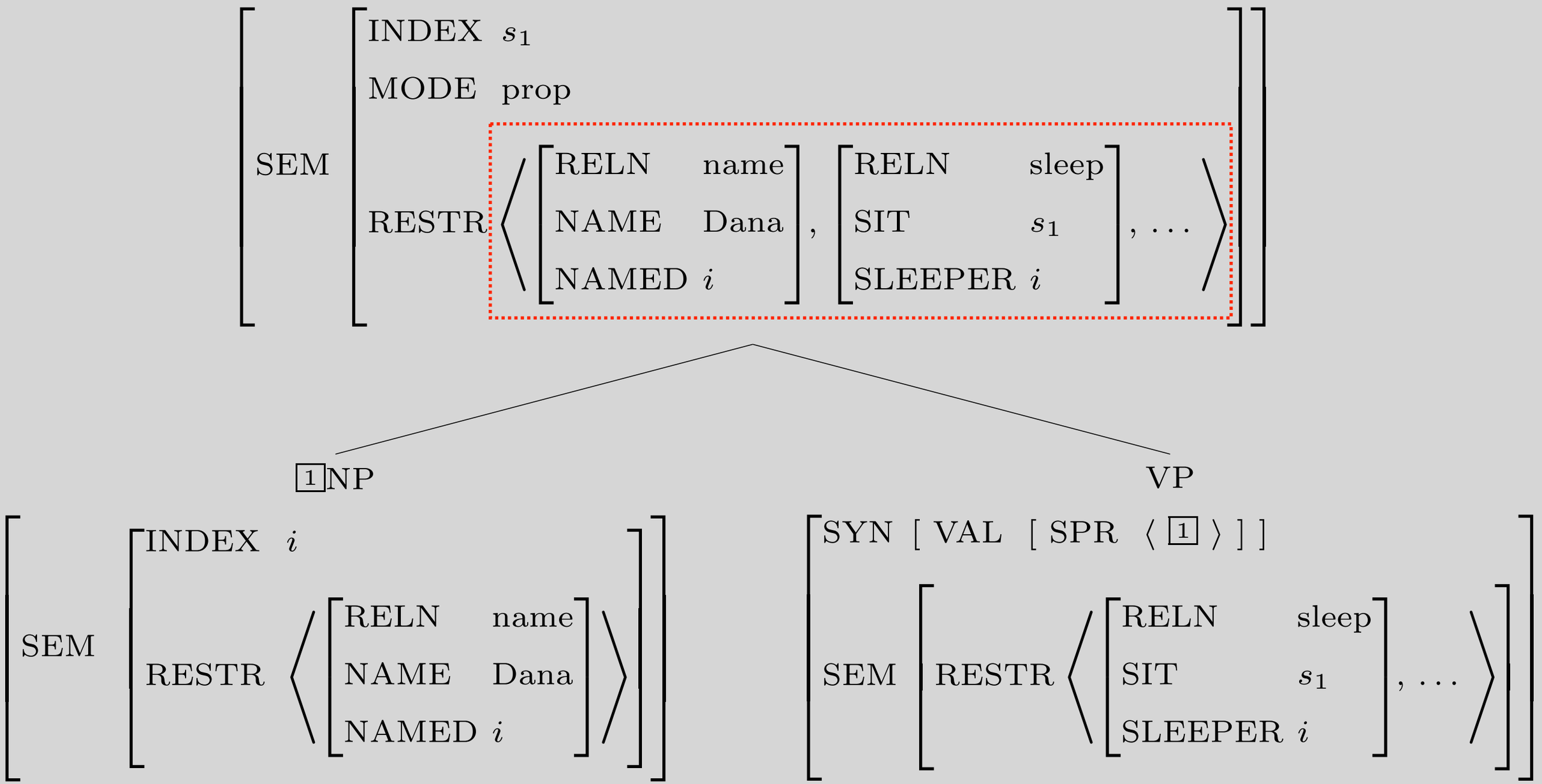
- The Semantic Inheritance Principle:

  In any headed phrase, the mother's MODE and INDEX are identical to those of the head daughter.

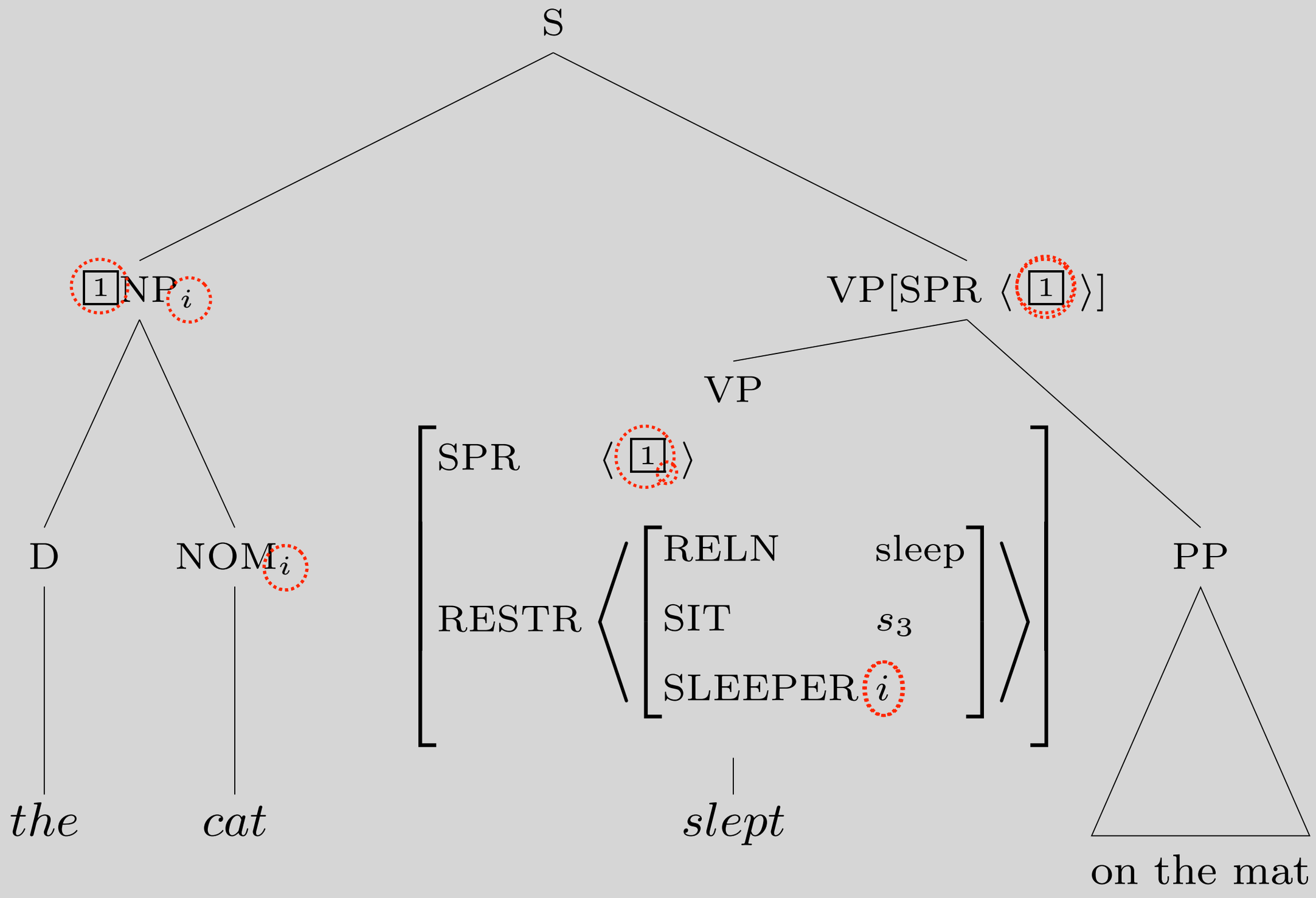
- The Semantic Compositionality Principle:

  In any well-formed phrase structure, the mother's RESTR value is the sum of the RESTR values of the daughters.

Semantic Compositionality Illustrated



What Identifies Indices?



Summary: Words ...

- contribute predications
- 'expose' one index in those predications, for use by words or phrases
- relate syntactic arguments to semantic arguments

$$\left\langle \text{slept}, \left[\begin{array}{ll} \textit{word} & \\ \text{SYN} & \left[\begin{array}{ll} \text{HEAD} & \textit{verb} \\ \text{VAL} & \left[\begin{array}{ll} \text{SPR} & \langle\ \text{NP}_{\textcircled{j}}\ \rangle \\ \text{COMPS} & \langle\ \rangle \end{array} \right] \end{array} \right] \\ \text{SEM} & \left[\begin{array}{ll} \text{INDEX} & \textcircled{s_1} \\ \text{MODE} & \text{prop} \\ \text{RESTR} & \left\langle \left[\begin{array}{ll} \text{RELN} & \text{sleep} \\ \text{SIT} & \textcircled{s_1} \\ \text{SLEEPER} & \textcircled{j} \end{array} \right], \ldots \right\rangle \end{array} \right] \end{array} \right] \right\rangle$$

Summary: Grammar Rules ...

- identify feature structures (including the INDEX value) across daughters

Head Specifier Rule

$$\begin{bmatrix} phrase \\ \text{SYN} \begin{bmatrix} \text{VAL} \begin{bmatrix} \text{SPR} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \end{bmatrix} \rightarrow \boxed{1} \quad \mathbf{H} \begin{bmatrix} \text{SYN} \begin{bmatrix} \text{VAL} \begin{bmatrix} \text{SPR} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Head Complement Rule

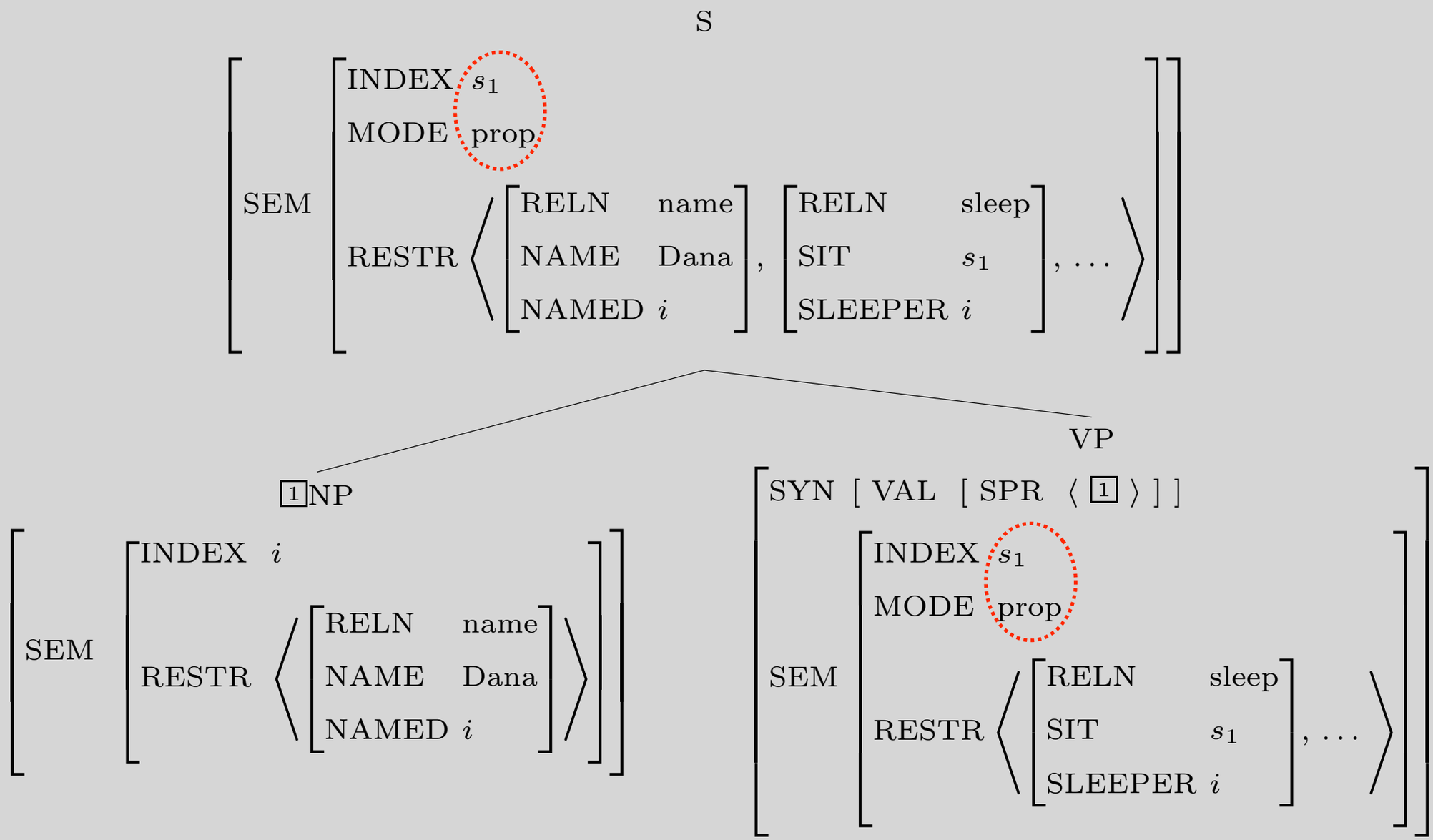
$$\begin{bmatrix} phrase \\ \text{SYN} \begin{bmatrix} \text{VAL} \begin{bmatrix} \text{COMPS} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \end{bmatrix} \rightarrow \mathbf{H} \begin{bmatrix} word \\ \text{SYN} \begin{bmatrix} \text{VAL} \begin{bmatrix} \text{COMPS} & \langle \boxed{1}, \ldots, \boxed{n} \rangle \end{bmatrix} \end{bmatrix} \end{bmatrix} \quad \boxed{1} \ldots \boxed{n}$$

Head Modifier Rule

$$[phrase] \rightarrow \mathbf{H} \boxed{1} \begin{bmatrix} \text{SYN} \begin{bmatrix} \text{COMPS} & \langle\ \rangle \end{bmatrix} \end{bmatrix} \begin{bmatrix} \text{SYN} \begin{bmatrix} \text{VAL} \begin{bmatrix} \text{COMPS} & \langle\ \rangle \\ \text{MOD} & \langle \boxed{1} \rangle \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

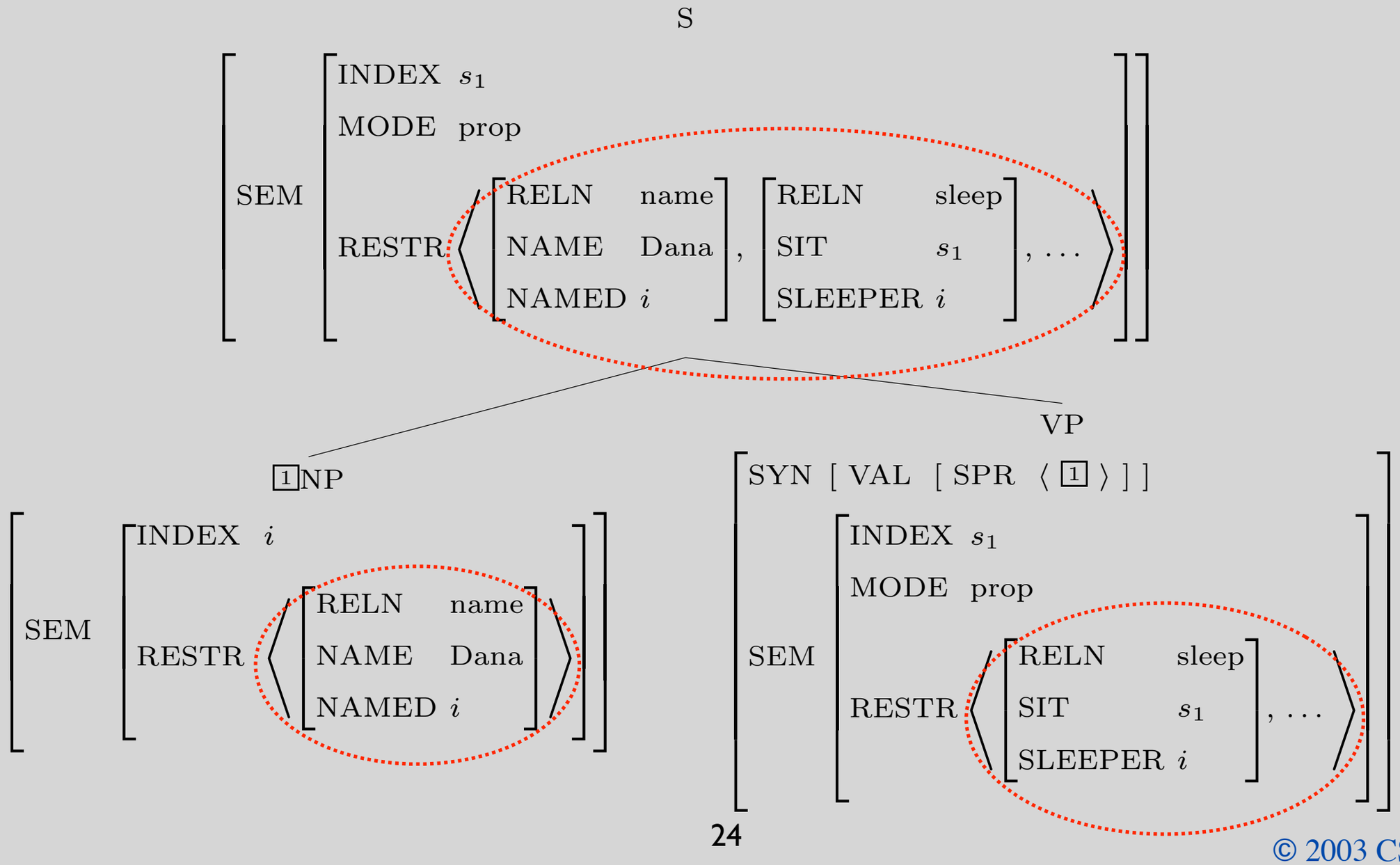
Summary: Grammar Rules ...

- identify feature structures (including the INDEX value) across daughters
- license trees which are subject to the semantic principles
  - SIP 'passes up' MODE and INDEX from head daughter



Summary: Grammar Rules ...

- identify feature structures (including the INDEX value) across daughters
- license trees which are subject to the semantic principles
  - SIP 'passes up' MODE and INDEX from head daughter
  - SCP: 'gathers up' predications (RESTR list) from all daughters



Other Aspects of Semantics

- Tense, Quantification (only touched on here)
- Modification
- Coordination
- Structural Ambiguity

Evolution of a Phrase Structure Rule

Ch. 2: NOM --> NOM PP

VP --> VP PP

Ch. 3: $$\begin{bmatrix} phrase \\ \text{VAL} \quad \begin{bmatrix} \text{COMPS} & \text{itr} \\ \text{SPR} & - \end{bmatrix} \end{bmatrix} \rightarrow \mathbf{H} \begin{bmatrix} phrase \\ \text{VAL} \quad \begin{bmatrix} \text{SPR} & - \end{bmatrix} \end{bmatrix} \text{PP}$$

Ch. 4: $$[phrase] \rightarrow \mathbf{H} \left[\text{VAL} \quad \left[\text{COMPS} \quad \langle\ \rangle \right] \right] \text{PP}$$

Ch. 5: $$[phrase] \rightarrow \mathbf{H}\boxed{1} \left[\text{SYN} \left[\text{VAL} \left[\text{COMPS} \langle\ \rangle \right] \right] \right] \left[\text{SYN} \left[\text{VAL} \begin{bmatrix} \text{COMPS} & \langle\ \rangle \\ \text{MOD} & \langle\ \boxed{1}\ \rangle \end{bmatrix} \right] \right]$$

Ch. 5 (abbreviated): $$[phrase] \rightarrow \mathbf{H}\boxed{1} \left[\text{COMPS} \langle\ \rangle \right] \begin{bmatrix} \text{COMPS} & \langle\ \rangle \\ \text{MOD} & \langle\ \boxed{1}\ \rangle \end{bmatrix}$$

Evolution of Another Phrase Structure Rule

Ch. 2: X --> X^{+} CONJ X

Ch. 3: $\boxed{1} \rightarrow \boxed{1}^{+} \begin{bmatrix} word \\ \text{HEAD} \quad conj \end{bmatrix} \boxed{1}$

Ch. 4: $\begin{bmatrix} \text{VAL } \boxed{1} \end{bmatrix} \rightarrow \begin{bmatrix} \text{VAL } \boxed{1} \end{bmatrix}^{+} \begin{bmatrix} word \\ \text{HEAD} \quad conj \end{bmatrix} \begin{bmatrix} \text{VAL } \boxed{1} \end{bmatrix}$

Ch. 5: $\begin{bmatrix} \text{SYN} & [\text{VAL } \boxed{0}] \\ \text{SEM} & [\text{IND} \quad s_0] \end{bmatrix} \rightarrow$

$$\begin{bmatrix} \text{SYN} & [\text{VAL } \boxed{0}] \\ \text{SEM} & [\text{IND} \quad s_1] \end{bmatrix} \ldots \begin{bmatrix} \text{SYN} & [\text{VAL } \boxed{0}] \\ \text{SEM} & [\text{IND} \quad s_{n-1}] \end{bmatrix} \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & conj \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{IND} & s_0 \\ \text{RESTR} & \langle \begin{bmatrix} \text{ARGS } \langle s_1 \ldots s_n \rangle \end{bmatrix} \rangle \end{bmatrix} \end{bmatrix} \begin{bmatrix} \text{SYN} & [\text{VAL } \boxed{0}] \\ \text{SEM} & [\text{IND} \quad s_n] \end{bmatrix}$$

Ch. 5 (abbreviated):

$$\begin{bmatrix} \text{VAL} & \boxed{0} \\ \text{IND} & s_0 \end{bmatrix} \rightarrow \begin{bmatrix} \text{VAL} & \boxed{0} \\ \text{IND} & s_1 \end{bmatrix} \ldots \begin{bmatrix} \text{VAL} & \boxed{0} \\ \text{IND} & s_{n-1} \end{bmatrix} \begin{bmatrix} \text{HEAD} & conj \\ \text{IND} & s_0 \\ \text{RESTR} & \langle \begin{bmatrix} \text{ARGS } \langle s_1 \ldots s_n \rangle \end{bmatrix} \rangle \end{bmatrix} \begin{bmatrix} \text{VAL} & \boxed{0} \\ \text{IND} & s_n \end{bmatrix}$$

Combining Constraints and Coordination

Coordination Rule

$$\begin{bmatrix}\text{VAL} & \boxed{0} \\ \text{IND} & s_0\end{bmatrix} \rightarrow \begin{bmatrix}\text{VAL} & \boxed{0} \\ \text{IND} & s_1\end{bmatrix} \ldots \begin{bmatrix}\text{VAL} & \boxed{0} \\ \text{IND} & s_{n-1}\end{bmatrix} \begin{bmatrix}\text{HEAD} & \textit{conj} \\ \text{IND} & s_0 \\ \text{RESTR} & \left\langle \begin{bmatrix}\text{ARGS} & \langle s_1 \ldots s_n \rangle\end{bmatrix} \right\rangle\end{bmatrix} \begin{bmatrix}\text{VAL} & \boxed{0} \\ \text{IND} & s_n\end{bmatrix}$$

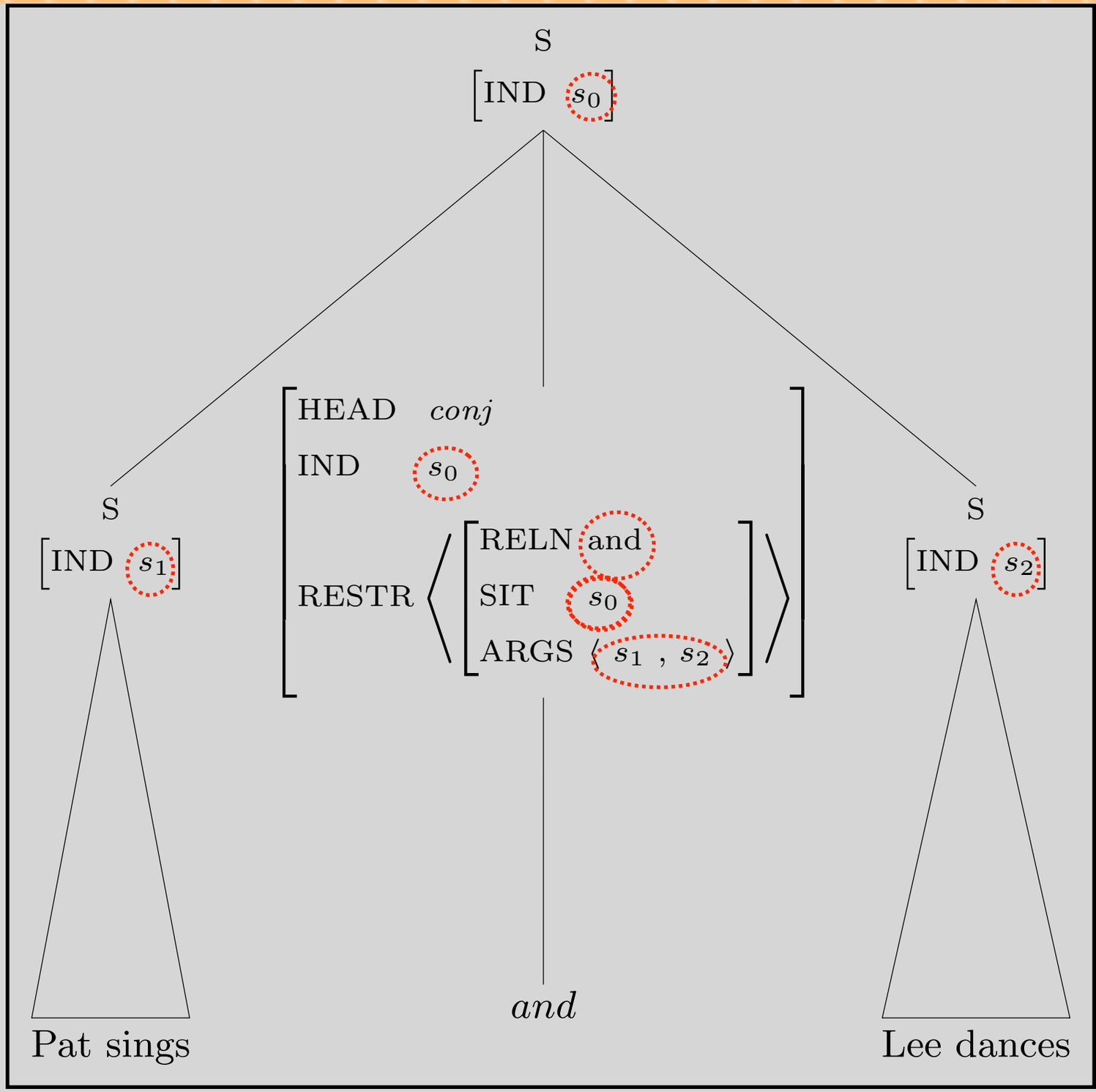
Lexical Entry for a Conjunction

$$\left\langle \text{and} , \begin{bmatrix}\text{SYN} & \begin{bmatrix}\text{HEAD} & \textit{conj}\end{bmatrix} \\ \text{SEM} & \begin{bmatrix}\text{INDEX} & s \\ \text{MODE} & \text{none} \\ \text{RESTR} & \left\langle \begin{bmatrix}\text{RELN} & \text{and} \\ \text{SIT} & s\end{bmatrix} \right\rangle\end{bmatrix}\end{bmatrix} \right\rangle$$

Combining Constraints and Coordination

Lexical Entry for *and*

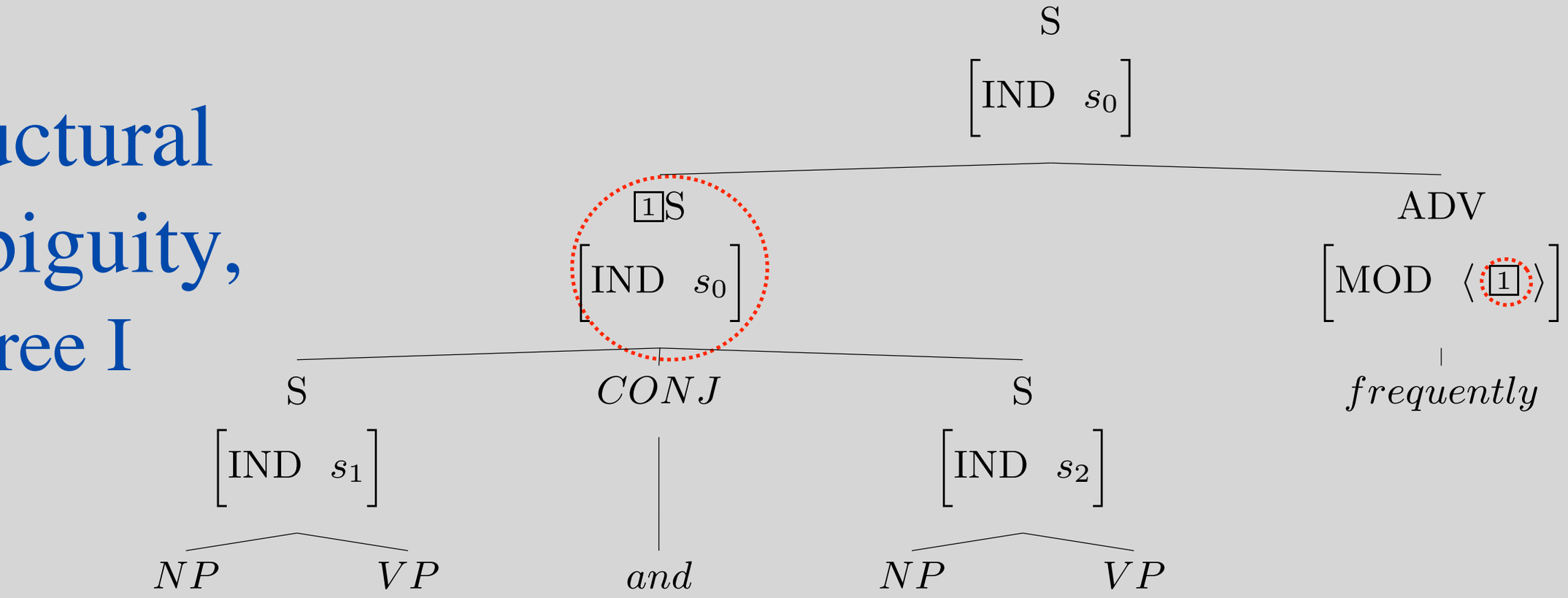
$$\left\langle \text{and} , \begin{bmatrix} \text{SYN} & \begin{bmatrix} \text{HEAD} & \textit{conj} \end{bmatrix} \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & s \\ \text{MODE} & \text{none} \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{and} \\ \text{SIT} & s \end{bmatrix} \right\rangle \end{bmatrix} \end{bmatrix} \right\rangle$$



Coordination Rule

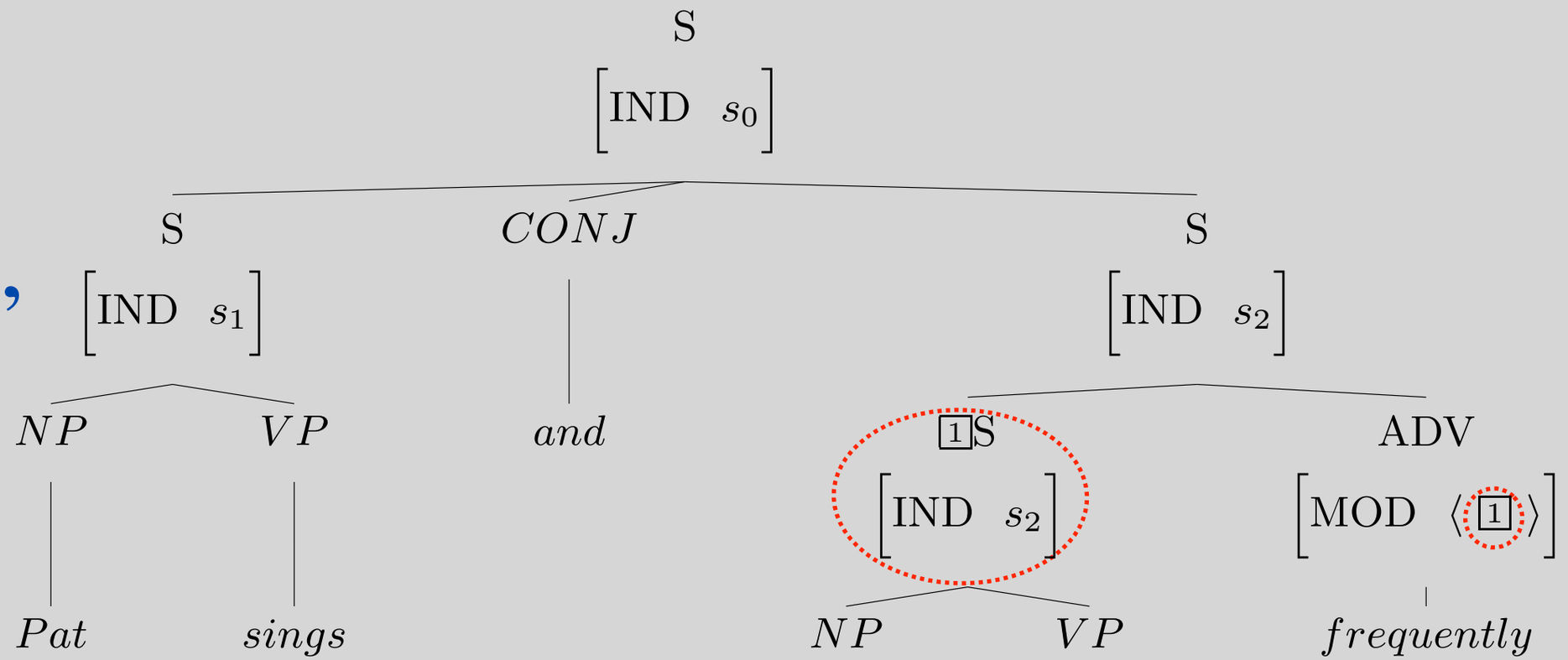
$$\begin{bmatrix} \text{VAL} & \boxed{0} \\ \text{IND} & s_0 \end{bmatrix} \rightarrow \begin{bmatrix} \text{VAL} & \boxed{0} \\ \text{IND} & s_1 \end{bmatrix} \ldots \begin{bmatrix} \text{VAL} & \boxed{0} \\ \text{IND} & s_{n-1} \end{bmatrix} \begin{bmatrix} \text{HEAD} & \textit{conj} \\ \text{IND} & s_0 \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{ARGS} & \langle s_1 \ldots s_n \rangle \end{bmatrix} \right\rangle \end{bmatrix} \begin{bmatrix} \text{VAL} & \boxed{0} \\ \text{IND} & s_n \end{bmatrix}$$

Structural Ambiguity, Tree I



$$\begin{bmatrix} \text{IND} & s_0 \\ \text{MODE} & \text{prop} \\ \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Pat} \\ \text{NAMED} & \text{k} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{sing} \\ \text{SIT} & s_1 \\ \text{SINGER} & \text{k} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{and} \\ \text{SIT} & s_0 \\ \text{ARGS} & \langle\, s_1 \,,\, s_2 \,\rangle \end{bmatrix}, \right. \\ & \left. \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Lee} \\ \text{NAMED} & \text{j} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{dance} \\ \text{SIT} & s_2 \\ \text{DANCER} & \text{j} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{frequently} \\ \text{ARG} & s_0 \end{bmatrix} \right\rangle \end{bmatrix}$$

Structural Ambiguity, Tree II



$$\begin{bmatrix}
\text{IND} & s_0 \\
\text{MODE} & \text{prop} \\
\text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Pat} \\ \text{NAMED} & \text{k} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{sing} \\ \text{SIT} & s_1 \\ \text{SINGER} & \text{k} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{and} \\ \text{SIT} & s_0 \\ \text{ARGS} & \langle\, s_1 \,,\, s_2 \,\rangle \end{bmatrix}, \right. \\
 & \left. \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Lee} \\ \text{NAMED} & \text{j} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{dance} \\ \text{SIT} & s_2 \\ \text{DANCER} & \text{j} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{frequently} \\ \text{ARG} & s_2 \end{bmatrix} \right\rangle
\end{bmatrix}$$

Question About Structural Ambiguity

Why isn't this a possible semantic representation for the string *Pat sings and Lee dances frequently*?

$$\begin{bmatrix}
\text{IND} & s_0 \\
\text{MODE} & \text{prop} \\
\text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Pat} \\ \text{NAMED} & \text{k} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{sing} \\ \text{SIT} & s_1 \\ \text{SINGER} & \text{k} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{and} \\ \text{SIT} & s_0 \\ \text{ARGS} & \langle\, s_1 \,,\, s_2 \,\rangle \end{bmatrix}, \right. \\
& \left. \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Lee} \\ \text{NAMED} & \text{j} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{dance} \\ \text{SIT} & s_2 \\ \text{DANCER} & \text{j} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{frequently} \\ \text{ARG} & s_1 \end{bmatrix} \right\rangle
\end{bmatrix}$$

Semantic Compositionality

$$\begin{bmatrix}
\text{IND} & s_0 \\
\text{MODE} & \text{prop} \\
\text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Pat} \\ \text{NAMED} & \text{k} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{sing} \\ \text{SIT} & s_1 \\ \text{SINGER} & \text{k} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{and} \\ \text{SIT} & s_0 \\ \text{ARGS} & \langle\, s_1 \,,\, s_2 \,\rangle \end{bmatrix}, \right. \\
 & \left. \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Lee} \\ \text{NAMED} & \text{j} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{dance} \\ \text{SIT} & s_2 \\ \text{DANCER} & \text{j} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{frequently} \\ \text{ARG} & s_0 \end{bmatrix} \right\rangle
\end{bmatrix}$$

$$\begin{bmatrix}
\text{IND} & s_0 \\
\text{MODE} & \text{prop} \\
\text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Pat} \\ \text{NAMED} & \text{k} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{sing} \\ \text{SIT} & s_1 \\ \text{SINGER} & \text{k} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{and} \\ \text{SIT} & s_0 \\ \text{ARGS} & \langle\, s_1 \,,\, s_2 \,\rangle \end{bmatrix}, \right. \\
 & \left. \begin{bmatrix} \text{RELN} & \text{name} \\ \text{NAME} & \text{Lee} \\ \text{NAMED} & \text{j} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{dance} \\ \text{SIT} & s_2 \\ \text{DANCER} & \text{j} \end{bmatrix}, \begin{bmatrix} \text{RELN} & \text{frequently} \\ \text{ARG} & s_2 \end{bmatrix} \right\rangle
\end{bmatrix}$$

Overview

- Some notes on the linguist's stance
- Which aspects of semantics we'll tackle
- Our formalization; Semantics Principles
- Building semantics of phrases
- Modification, coordination
- Structural ambiguity
- Next time: How the grammar works

RQs Quantifiers

- What is up with QRESTR and QSCOPE?

(50)
$$\begin{bmatrix} \text{RESTR} & \left\langle \begin{bmatrix} \text{RELN} & \textbf{exist} \\ \text{BV} & i \\ \text{QRESTR} & \boxed{1} \\ \text{QSCOPE} & \boxed{2} \end{bmatrix}, \boxed{1}\begin{bmatrix} \text{RELN} & \textbf{dog} \\ \text{INST} & i \end{bmatrix}, \boxed{2}\begin{bmatrix} \text{RELN} & \textbf{all} \\ \text{BV} & j \\ \text{QRESTR} & \boxed{3} \\ \text{QSCOPE} & \boxed{4} \end{bmatrix}, \right. \\ \left. \boxed{3}\begin{bmatrix} \text{RELN} & \textbf{family} \\ \text{INST} & j \end{bmatrix}, \boxed{4}\begin{bmatrix} \text{RELN} & \textbf{save} \\ \text{SAVER} & i \\ \text{SAVED} & j \end{bmatrix} \right\rangle \end{bmatrix}$$

And to represent the reading where the universal quantifier outscopes the existential, as in (46b), we can simply identify the QSCOPE values differently, as shown in (51):

(51)
$$\begin{bmatrix} \text{RESTR} & \left\langle \boxed{2}\begin{bmatrix} \text{RELN} & \textbf{exist} \\ \text{BV} & i \\ \text{QRESTR} & \boxed{1} \\ \text{QSCOPE} & \boxed{4} \end{bmatrix}, \boxed{1}\begin{bmatrix} \text{RELN} & \textbf{dog} \\ \text{INST} & i \end{bmatrix}, \begin{bmatrix} \text{RELN} & \textbf{all} \\ \text{BV} & j \\ \text{QRESTR} & \boxed{3} \\ \text{QSCOPE} & \boxed{2} \end{bmatrix}, \right. \\ \left. \boxed{3}\begin{bmatrix} \text{RELN} & \textbf{family} \\ \text{INST} & j \end{bmatrix}, \boxed{4}\begin{bmatrix} \text{RELN} & \textbf{save} \\ \text{SAVER} & i \\ \text{SAVED} & j \end{bmatrix} \right\rangle \end{bmatrix}$$

RQs: Quantifiers

- I am curious about the article mentioned in footnote 17 by Kurtzman and MacDonald. Seeing how long the article is after looking it up through the UW library, I was wondering if we could hear a summary or explanation as to why humans don't always resolve scope.
- Are there strictly four types of semantic modes? Why can't quantifiers be a type of semantic mode like referential NPs are?

RQs: Truth conditions

- For the semantic meaning of a phrase/ sentence, why we focus on the TRUE/ FALSE of the statement? Are we treating the semantic meaning as binary value?

RQs: predications

- For the RELN feature, is there a specific set of constraints that is allowed to specify the feature? Some RELN constraints are just the word from the lexical entry, while others (e.g., that for determiner 'a') can be 'exist' or 'all.' Are there other special RELN values that don't match the lexical entry?

RQs: predications

- Should synonyms have the same RELN value? What about synonyms that reverse argument order (*ride* vs. *transport*)?
- What is up with the cutesy, varied role labels?
- In (14), the RELN value is lexical entry, but why are names generalized into name and a NAME feature is added in (17)?

RQs: INDEX

- What is the type of the INDEX values? Superficially, they look like strings or variable names. In addition, the name s seems to be reserved for referencing situations.
- When should the index be a nominal expression (e.g. i, j, k) and when should it be a situation (e.g. s)?

RQs: INST v. SIT

- I am confused about what INSTANCE is doing. a) On pg 139 paragraph 1, it says that it refers to a non--situation argument. Refering to the lexical entry for "dog" on pg 141, INST coindexes with INDEX i. Is INST merely the reference in this case? b) pg 139 also mentions that adjectives have INST. Why are adjectives considered non-situational? They appear to be propositions as well. We can verify if someone is tall for example.

RQs: Aktionsart

- Does categorizing various verbs of different Aktionsart (for example, 'love' (state), 'walk' (activity), see Vendler (1967)) as 'Situation' on p. 138, in (14), imply that these verbs are all lumped together as 'events,' without distinguishing them based on their Aktionsart?

RQs: SIP

- In (23), the MODE and INDEX of the mother and daughter are identical due to the Semantic Inheritance Principle. Why do we not tag these instead of writing the values out both times?

RQs: Modifiers

- What about pre-head modifiers?

RQs: MODE

- Looking at the chart on page 136, I'm curious about what the semantic mode of "Kim is happy?" would be. Do semantic modes determine the "kind of phrase" column, or would it be possible to categorize "Kim is happy?" as a noninverted sentence (kind of phrase) question (semantic mode)? (Though it doesn't seem like we have a way to represent the "kind of phrase" column in our grammar.)

- More broadly, do semantic modes ever imply an underlying sentence structure?

RQs: MODE

- How are we accounting for the shift in word order between declarative and interrogative sentences in some languages? A concept I've seen in the past is wh-movement, where we'd say the both versions have the same structure but the presence of the question word triggers a shift in word order. Are we thinking that the semantics of the wh-phrase motivates this shift? Is there another explanation?

RQs: MODE

- In (19c) on p. 142, the Mode of 'love' is classified as 'Proposition.' How then do we interpret 'love' when it appears in 'Question' or 'Directive' Modes?
- Is it possible for a noun to have a semantic mode of prop, or a verb to have a semantic mode of ref? It looks like some pos categories we have generally fall into certain semantic modes.

RQs: MODE

- Could you elaborate a little more on the shifting definition or use of the word "NP" Such as it is shown in 5.3.2 example 8? It seems to be the odd one out of the other kind of information in that table, not a kind of utterance at all.
- On page 138, there is an example [MODE none]. We can use none to indicate no possible value. I wonder if we can use put none to other feature?

RQs: Other

- How does this model handle lexical ambiguity, as in *The rabbi married my sister*.
- I know that most syntactic rules are not universal. But do the feature structures for semantics work to model semantics across languages? Is this method ever used as an intermediary step in machine translation?

RQs: Other

- How do we decide what is accounted for when we incorporate semantics into our theory of syntax? It seems to be wherever syntax would affect semantics, to ensure that semantic agreement is also present.